

- supialia: Phalangeridae). *Australian Journal of Zoology* **53**, 395-402.
- Claridge AW and Lindenmayer DB (1998) Consumption of hypogeous fungi by the mountain brushtail possum (*T. caninus*) in eastern Australia. *Mycological Research* **102**, 269-272.
- Collins BB (2003) Phylogeography of brushtail possums (*T. vulpecula*). (Unpublished BSc Hons thesis, James Cook University, Townsville)
- Hynes D and Clelland M (2005) Presence of Bobucks *Trichosurus caninus* in The Gurdies on Westernport Bay, Victoria. *The Victorian Naturalist* **122**, 141-145.
- Hynes D (2006) The Gurdies Bobucks: How Are they Faring? *The Victorian Naturalist* **123**, 117-118.
- Hynes D (2007) Final Report: Gippsland Bobuck Infrared-Camera Survey, 2006-2007. Department of Sustainability and Environment, Melbourne.
- Kavanagh RP (1984) Seasonal changes in habitat use by gliders and possums in southeastern New South Wales. In *Possums and Gliders*, pp. 527-543. Eds AP Smith and ID Hume. (Surrey Beatty & Sons: Chipping Norton, NSW)
- Kerr L (2001) *Possums: the Brushtails, Ringtails and Greater Glider*. (UNSW Press: Sydney)
- Kutt AS and Yugovic JW (1996) Fauna of the Grantville Gravel Reserve, with Reference to Vegetation and Conservation Significance. *The Victorian Naturalist* **113**, 58-57.
- Lindenmayer DB, Cunningham RB, Tanton MT, Smith AP, and Nix HA (1990) Habitat requirements of the mountain brushtail possum and the greater glider in the montane ash-type eucalypt forests of the Central Highlands of Victoria. *Australian Wildlife Research* **17**, 467-478.
- Lindenmayer DB, Dubach J, and Viggers KL (2002) Geographic dimorphism in the mountain brushtail possum *Trichosurus caninus*: the case for a new species. *Australian Journal of Zoology* **50**, 369-393.
- Martin JK, Handasyde KA, Wright CJ, Ayer LT, McDonald-Madden E and Reside A (2004) Aspects of the ecology of the bobuck *Trichosurus caninus* in the Strathbogie Ranges, Victoria. In *The biology of Australian possums and gliders*, pp. 484-489. Eds RL Goldingay and SM Jackson. (Surrey Beatty & Sons: Chipping Norton, NSW)
- Martin JK and Handasyde KA (2007) Comparison of bobuck demography in two habitat types in the Strathbogie Ranges. *Australian Journal of Zoology* **271**, 375-385.
- Menkhorst P and Knight F (2001) *A Field Guide to the Mammals of Australia*. (Oxford University Press: Melbourne)
- Seebeck JH, Warneke RM and Baxter BJ (1984) Diet of the bobuck, *Trichosurus caninus* (Ogilby) (Marsupialia: Phalangeridae) in a mountain forest in Victoria. In *Possums and Gliders*, pp. 145-154. Eds AP Smith and ID Hume. (Surrey Beatty & Sons: Chipping Norton, NSW)
- Tyndale-Biscoe H (2005) *Life of marsupials*. (CSIRO Publishing: Melbourne)
- Wilson CG (1990) Mammals of The Gurdies, a proposed Flora and Fauna Reserve. *The Victorian Naturalist* **107**, 52-57.
- Web Site:**  
"Bobuck Underground" Biodiversity Survey  
<[http://www.thylacoleo.com/bobuck\\_underground/](http://www.thylacoleo.com/bobuck_underground/)>
- Media Coverage 2006:**  
*The Current*, Spring Issue 2006, pg 2. Tales of the Bobuck, Maureen Sherrin.  
*South Gippsland Sentinel Times*, June 27, 2006, pg. 25. Discovery of an Unknown Possum.

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## Velvet Thread-petal *Stenopetalum velutinum* rediscovery in Victoria

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### Abstract

The Velvet Thread-petal *Stenopetalum velutinum* has been rediscovered in Victoria in the Big Desert – the first confirmed records since the nineteenth century. (*The Victorian Naturalist* **127** (1) 2010, 19-22)

**Keywords** Stenopetalum, velutinum, rediscovery, Big Desert

### Introduction

#### 2002 Wildfires and Report

The 2002 wildfires in the Big Desert burnt a substantial part of the west and north-west of the Big Desert (Fig. 1), including stands of 36 plant species listed as rare or threatened in Victoria. The post-fire status of some of these plants was assessed on field trips in 2003 (Carter and Cheal 2004). During one of these trips, we traversed an unusual patch of low mallee, whilst returning to the car one evening. We collected specimens of an unfamiliar tall herb.

These specimens subsequently proved to be Velvet Thread-petal *Stenopetalum velutinum* F. Muell., as recognised by the distinct branching hairs, the lack of simple hairs, the largely linear leaves and near-glabrous upper stems.

*Stenopetalum velutinum* is a more or less annual native herb of the crucifer family (Brassicaceae). It grows to about 65 cm tall from a woody base. The basal leaves are about 7 cm long and entire or with a few teeth. The stem leaves are lanceolate to linear and up to 7 cm

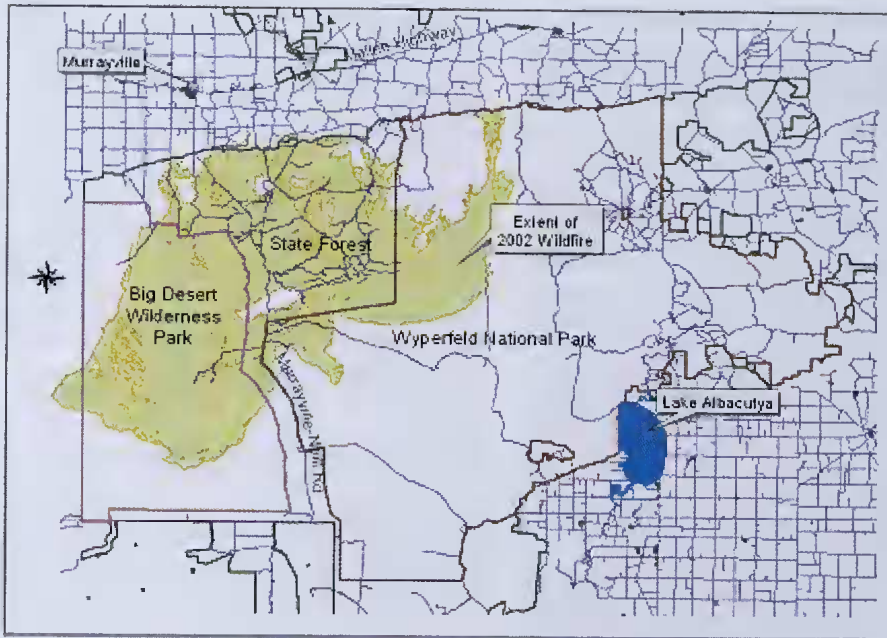


Fig. 1. Extent of the 2002 Wildfire in the Big Desert (fire boundary courtesy of DSE, Mildura; other data from the DSE corporate library).

long. The insignificant greenish-yellow flowers are followed by oblong or obovoid short fruits about 5 to 8 mm long. The main feature that distinguishes this herb from the species with which it is most likely to be confused (i.e. Narrow Thread-petal *S. lineare* R.Br. ex DC.) is the distinctively branched hairs scattered along the stems, cf. the short covering of mostly simple (unbranched) velvety hairs covering the foliage and stems of the closely-related and similar *S. lineare*. Furthermore, the basal leaves of *S. velutinum* are reliably linear (perhaps with a few insignificant marginal teeth) cf. the pinnately lobed basal leaves of *S. lineare*. *Stenopetalum lineare* is common and widespread in native vegetation of north-western Victoria, from raak shrublands near salt pans to mallee communities on loamier sands and broombush on laterised outcrops.

In spite of a 25-year familiarity with the flora of the north-west of Victoria, I had never seen *S. velutinum*, although the other two Victorian species of *Stenopetalum* (*S. lineare* and *S. sphaerocarpum*) had been commonly encountered.

#### *Stenopetalum velutinum* in Victoria

The Victorian Flora Information System (FIS), the database of plant occurrences maintained

by the Department of Sustainability and Environment (DSE), has no site records for *S. velutinum*, suggesting that this species had not been recorded in the last century or so of surveys in Victoria.

*The Flora of Victoria* vol. 3 considered *S. velutinum* '... now apparently very rare in Victoria and reported recently from only Wyperfeld National Park and Red Cliffs area' (Walsh and Entwisle 1996). However, these recent reports are not supported by specimens lodged at the National Herbarium (MEL) nor by site records in the FIS.

Inspection of MEL collections, (Royal Botanic Gardens Board, Melbourne, MELISR database, 30 January 2009), revealed eight Victorian collections. All were from the Wimmera (mostly around Nhill to Dimboola) and dating from 1885 to 1899. There was scant ecological information provided, apart from the notes 'good soils' (MEL620107A) and 'pastures' (MEL 2232767A). The most recent collection was dated 1899. As is usually the case with historic records, these earlier collection sites cannot be precisely located in the field.

Clearly, *S. velutinum* is extremely rare in Victoria. It is listed as 'vulnerable in Victoria' in

DSE (2005). Carter and Cheal (2004) proposed that its status be redetermined as 'endangered in Victoria'. *Stenopetalum velutinum* is not listed under Victoria's Flora and Fauna Guarantee Act, nor the Federal Environment Protection and Biodiversity Conservation Act.

### Recent Big Desert record

The specimen collected in the 2003 record came from a small mallee flat of approximately 400 m<sup>2</sup> and 50 to 100 m east of latitude 35° 30' 35.8" South and longitude 141° 18' 41.2" East. Twelve individual plants were seen, all apparently regenerated from seed after the 2002 wildfires. Dominant eucalypts were Dumosa Mallee *Eucalyptus dumosa*<sup>1</sup> s.l. and Narrow-leaf Mallee *E. leptophylla*. This small mallee patch was a marked contrast to the extensive (surrounding) heathland vegetation, dominated by Heathy Mallee (*sensu* White *et al.* 2003), which has an open canopy of Yellow Mallee *E. incrassata* and *E. leptophylla*, above an open shrub layer of typical heathland species, particularly Desert Banksia *Banksia ornata*, Common Heath-myrtle *Calytrix tetragona*, Western Sheoke *Casuarina* sp. (also known as *Allocasuarina mackliniana*)<sup>2</sup>, Dwarf Sheoke *Casuarina pusilla*, Desert Hakea *Hakea mitchellii* and Silky Tea-tree *Leptospermum myrsinoides*.

Specimens of *S. velutinum* were collected and will be lodged with MEL.

### Ecological speculation

Former Victorian occurrences of *S. velutinum* were from the relatively fertile loams of the Wimmera (Connor 1966; Morcom 2000). The Big Desert is dominated by aeolian Lowan sands that are remarkably free-draining and infertile (Lilley 1993; Cheal 1994). The infertile sands of the Big Desert support few grazing mammals, including very few kangaroos and rabbits (Cochrane and McDonald 1966; Sandell *et al.* 2002). It is suggested that *S. velutinum* is highly palatable and was early eliminated from most of its former Victorian range following the introduction of domestic stock and rabbits. Lack of contemporary seed sources and ongoing grazing by rabbits and kangaroos may be maintaining its rarity in parks and reserves. Its persistence in this small site towards the centre of the Big Desert can be attributed to (1) a lack of local grazing pressure (from rabbits, goats or kangaroos), as the surrounding habitats

support very low densities of grazing mammals, and (2) a gap in the overlying Lowan sands, exposing more fertile loamy sands derived from the underlying Parilla Formation (White *et al.* 2003).

Although *S. velutinum* may have taken advantage of the opportunities presented for regeneration by the recent fire, it is unlikely to be a strict fire ephemeral (i.e. with an obligately fire-cued germination and not visible for extended periods between fires). The two other Victorian species in the genus, *S. lineare* and *S. sphaerocarpaceum*, are annuals and commonly seen in both burnt and long-unburnt habitats. Other native species of the family (Brassicaceae) in north-western Victoria are often disturbance responsive, but none is known to be a strict fire ephemeral.

There are recent records of *S. velutinum* from the arid centre of Australia (Fig. 2), where the species apparently remains (seasonally) common. However, there are few to no recent records from the agricultural areas of South Australia. In New South Wales, *S. velutinum* is gazetted 'Presumed Extinct', with only three (historic) records from the state (PlantNET, Royal Botanic Gardens Sydney).

It appears that *S. velutinum* has been (nearly) exterminated in south-eastern Australia by a combination of land clearance (including for cropping) and high grazing pressure from introduced mammals (notably rabbits and hares), and perhaps also from macropods (increased populations due to the forage increase resulting from tree clearance). There are very few Western Grey Kangaroos *Macropus fuliginosus* in the Big Desert, and no evidence of rabbits or goats in the vicinity of this stand of *S. velutinum*. Hence, none of the *S. velutinum* plants showed any evidence of having been browsed. The recent fire (one of a succession of large, landscape-scale fires in the Big Desert, e.g. 1959, 1982) may have provided some release from even this low grazing pressure, as native vegetation regenerating after being burnt is considered more palatable than older vegetation (Land Conservation Council 1974 and 1987; Tasker and Bradstock 2006), thus providing increased local forage for the very small populations of mammalian browsers found in the Big Desert.



**Fig. 2.** Distribution of *Stenopetalum velutinum* records (as extracted from Australia's Virtual Herbarium: [www.rbg.vic.gov.au/avh/](http://www.rbg.vic.gov.au/avh/))



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## Notes

1. nomenclature follows Walsh and Entwisle (2003) unless indicated otherwise
2. after Hwang (1992)

## References

- Carter O and Cheal D (2004) *Recovery of Rare and Threatened Flora after the 2002 Wildfire and Vital Attributes to Assist Ecological Fire Management in the Big Desert, Western Victoria*. Arthur Rylah Institute Technical Paper Series.
- Cheal DC (1994) Fire Succession in Heathlands and Implications for Vegetation Management. In *Fire and Biodiversity: The Effects and Effectiveness of Fire Management*. Biodiversity Unit, Department of Environment, Sport and Territories, Canberra, ACT
- Cochrane GR and McDonald NHE (1966) A Regeneration Study in the Victorian Mallee. *The Victorian Naturalist* 83, 220-226.
- Connor DJ (1966) Vegetation studies in north-west Victoria II. The Horsham Area. *Proceedings of the Royal Society of Victoria* 79, 637-647.
- DSE (2005) *Advisory List*. Department of Sustainability and Environment (Victoria), East Melbourne, Victoria.
- Hwang YH (1992) The Casuarinaceae: *Allocasuarina* is unsupported. *Australian Systematic Botany Society Newsletter* 70, 16-19.

- Land Conservation Council (1974) *Report on the Mallee Study Area*. Land Conservation Council of Victoria, Melbourne.
- Land Conservation Council (1987) *Report on the Mallee Area Review*. Land Conservation Council of Victoria, Melbourne.
- Lilley DM (1993) *Banksia ornata* decline in Wyperfeld National Park. Biology C31 Assignment.
- Morcom L (2000) The Floristic Composition and Regeneration Characteristics of Buloke (*Allocasuarina luehmannii*) Woodland of the Wimmera, Victoria. In *Centre for Environmental Management*. Ballarat, Victoria.
- Sandell P, Ballentine M and Horner G (2002) *Vegetation Recovery in the Victorian Mallee Parks 1991-1998*. Parks Victoria, Melbourne
- Tasker EM and Bradstock RA (2006) Influence of cattle grazing practices on forest understorey structure in north-eastern New South Wales. *Austral Ecology* 31, 490-502.
- Walsh NG and Entwisle TJ (1996) *Flora of Victoria. Vol. 3 Dicotyledons Winteraceae to Myrtaceae*. (Inkata Press: Melbourne)
- White M, Oates A, Brown J, Barlow T, McMahon A, Rosengren N, Cheal D, Sutter G, Sinclair S, Chesterfield E, Froud D and Pelikan M (2003) *Vegetation Mapping North-West Victoria*, Arthur Rylah Institute for Environmental Research, Department of Sustainability and Environment, East Melbourne, Victoria.

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